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Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY *(As Used on Label and List)*
Zinc Ball Anode

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name Eastern Alloys, Inc.	**Emergency Telephone Number**
Address *(Number, Street, City, State, and ZIP Code)* Henry Henning Drive (PO Box EA) Maybrook, New York 12543	**Telephone Number for Information** [redacted] **Date Prepared** April 16, 1986 **Signature of Preparer** *(optional)*

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Zinc CAS007440666		NA		100%
dust particles of product		10 mg/m^3		
(Nuisance Particulates)				

Section III — Physical/Chemical Characteristics

Boiling Point 1665		**Specific Gravity (H_2O = 1)** 6.7	
Vapor Pressure (mm Hg) NA		**Melting Point** NA	
Vapor Density (AIR = 1) NA		**Evaporation Rate (Butyl Acetate = 1)** NA	

Solubility in Water
Negligible

Appearance and Odor
Bluish-white metal

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
NA	NA		

Extinguishing Media
Dry powder extinguisher DO NOT USE WATER ON BURNING METAL

Special Fire Fighting Procedures
Wear self-contained breathing apparatus.

TRW-02785

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Unusual Fire and Explosion Hazards
When heated excessively beyond melting point (>1500°F), metal vapor burns in air with bright greenish-yellow flame to produce zinc oxide fume (TLV - 5mg/m^3)(CAS 001314132)

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid NA
	Stable	X	

Incompatibility (*Materials to Avoid*): Strong acids, halogen gases, oxidizers

Hazardous Decomposition or Byproducts: NA

Hazardous Polymerization	May Occur		Conditions to Avoid NA
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? Not likely (unless machined, welded or melted) Skin? Not likely Ingestion? Not likely

Health Hazards (*Acute and Chronic*)

Inhalation of zinc oxide fume may cause "metal fume fever".

Ingestion may irritate lining of stomach and intestines.

Carcinogenicity: NTP? No — IARC Monographs? No — OSHA Regulated? No

No reported chronic toxicity

Signs and Symptoms of Exposure

Symptoms of "metal fume fever": fever, chill, metallic taste, chest tightness or nausea.

Symptoms of ingestion: fever, stomach cramps, diarrhea

Medical Conditions Generally Aggravated by Exposure: emphysema, asthma.

Emergency and First Aid Procedures

Terminate exposure and remove patient to fresh air. Refer patient to physician.

Avoid inhalation of dusts generated in any secondary operations.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

If large quantities of dust are generated, use industrial vacuum to clean up. Molten metal should be allowed to solidify prior to clean up.

Waste Disposal Method

Reclaim using standard industrial practices (remelt). Dispose of dusts using approved methods consistent with applicable local, state and federal regulations.

Precautions to Be Taken in Handling and Storing

Keep dry; if alloy becomes wet, allow to dry before melting.

Other Precautions: NA

Section VIII — Control Measures

Respiratory Protection (*Specify Type*): NIOSH/MSHA approved respirator for nuisance dust when fume levels exceed TLV

Ventilation	Local Exhaust: Use as required to prevent fume from exceeding TLV	Special: NA
	Mechanical (General): NA	Other: NA

Protective Gloves: skin contact Recommended when significant may occur

Eye Protection: Consistent with industrial safety practices for grinding or machining non-ferrous metals or handling molten metals.

Other Protective Clothing or Equipment: Consistant with material handled(heat resistant when working w/molten metal)

Work/Hygienic Practices: Wash after handling alloys.

TRW-02786

L.J. + M. LaPlace

0908-4174

PRODUCT DATA

ZINC
Special High Grade
High Grade
Prime Western

Metals Cominco

HEALTH AND SAFETY DATA SHEET

HAZARDOUS INGREDIENTS

Cominco Tadanac brand zinc may contain trace elements including, lead, iron, cadmium, copper, tin, indium and thallium within the limits stated in the product specification sheets. These elements are not known to constitute a risk to health or safety at the levels involved. Current regulatory limits for airborne concentrations of zinc are 5 mg/m³ for zinc oxide fume, 10 mg/m³ for zinc oxide dust, and 1 mg/m³ for zinc chloride.

PHYSICAL CHARACTERISTICS

Zinc is a bluish-silver metal with a melting point of 419° C, a boiling point of 907° C, and a specific gravity of 7.13 at 25° C.

FIRE AND EXPLOSIVE HAZARD DATA

Finely divided zinc oxide fume is evolved at high temperatures. Self-contained breathing apparatus is advised where zinc is involved in a high temperature fire. Use dry chemical extinguishing media. Finely divided zinc metal is highly combustible and may ignite explosively in the presence of moisture. Zinc reacts with acids and alkalis to produce hydrogen gas which is potentially explosive in poorly ventilated areas. Cast slabs of zinc may contain cavities that can collect moisture if stored in a wet environment. Entrapped moisture will expand explosively when immersed in a molten bath.

HEALTH HAZARD DATA

Excessive exposure to zinc oxide fume may result in "metal fume fever" with symptoms similar to common flu, e.g. chills, fever, dry throat, cough, diarrhea, vomiting and headache. Anyone exposed to zinc oxide fume and exhibiting these symptoms should be removed from exposure and referred to medical attention. Good personal hygiene is advised to avoid ingestion or inhalation through contaminated food or smoking.

REACTIVITY DATA

Contact with acid or alkalis may result in the evolution of hydrogen gas.

SPILL OR LEAK PROCEDURES

Federal, Provincial or State regulations may limit the level of zinc contamination of effluent streams. Spilled metallic zinc can usually be returned to the process. Disposal of solid wastes may be subject to local regulation.

SPECIAL PROTECTION INFORMATION

Sufficient ventilation should be provided to ensure the regulatory limits for zinc compounds are not exceeded in the work environment. Abatement equipment should be adequate for compliance with Federal, Provincial or State emission standards. NIOSH approved fume respirators should be used where permissible concentrations are exceeded. Working with molten metal requires the use of personal protective equipment and clothing appropriate for the task.

SPECIAL PRECAUTIONS

Store slab zinc brand side up in a covered dry area. Zinc slabs suspected of containing moisture should be thoroughly dried before being added to a molten bath. Use caution when adding slabs to a molten bath.

Hazardous Chemicals Data

NFPA 49-1975

1975 Edition of NFPA 49

The 1975 edition of Hazardous Chemicals Data incorporates changes prepared by the Sectional Committee on Properties of Hazardous Chemicals and adopted by the National Fire Protection Association at the 1975 Annual Meeting on recommendation of the Correlating Committee of the Committee on Chemicals and Explosives. It supersedes the 1973 edition. Amendments adopted in 1975 are summarized beginning on page 49-3.

Origin and Development of NFPA No. 49

The compilation of information on hazardous chemicals was originated by the NFPA Committee on Hazardous Chemicals and Explosives in cooperation with the American Chemical Society. A Table of Common Hazardous Chemicals (NFPA No. 49) was adopted in 1928. Revisions were adopted in 1929, 1931, 1935, 1938, 1939, 1941, 1942, 1944, 1946 and 1950.

A complete revision, prepared by the Sectional Committee on Properties of Hazardous Chemicals, was adopted in 1961 under the new title, Hazardous Chemicals Data (NFPA No. 49M). Amendments were adopted in 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1971, 1972, 1973, and 1975.

Starting with the 1964 edition, the identifying number of Hazardous Chemicals Data has been NFPA 49.

The data presented are subject to additions and revisions and are not all-inclusive, but are presented as the most authoritative information available to date. The purpose in listing a substance is not to discourage its proper use, but rather to make available information relative to its hazardous properties and fire fighting phases in order to promote and improve methods of fire protection and prevention.

This is not a regulatory standard and does not include all possible detailed information with regard to hazards, storage safeguards, fire fighting, or unusual conditions which may be encountered.

REMARKS: Electrical installations in Class I hazardous locations, as defined in Article 500 of the National Electrical Code should be in accordance with Article 501 of the Code. If explosionproof electrical equipment is necessary, it shall be suitable for use in Group D. See Flammable and Combustible Liquids Code (NFPA No. 30), National Electrical Code (NFPA No. 70), Static Electricity (NFPA No. 77), Lightning Protection Code (NFPA No. 78), and Fire-Hazard Properties of Flammable Liquids, Gases and Volatile Solids (NFPA No. 325M).

XYLIDINES $(CH_3)_2C_6H_3NH_2$

DESCRIPTION: Exists in six isomeric forms varying from a light yellow to a brown liquid.

FIRE AND EXPLOSION HAZARDS: Flash point, 206° F. Boiling point, 415–439° F. Forms explosive chloroamines on exposure to hypochlorites. Not soluble in water.

LIFE HAZARD: Highly toxic by ingestion, skin, absorption or inhalation. Very insidious material in that it does not have adequate warning properties.

PERSONAL PROTECTION: Wear full protective clothing.

FIRE FIGHTING PHASES: Use water spray, dry chemical, foam, or carbon dioxide. When heated to decomposition, the xylidines emit highly toxic fumes.

USUAL SHIPPING CONTAINERS: Glass bottles; cans and drums.

STORAGE: Protect against physical damage. Store in a cool, dry, well-ventilated location. Separate from oxidizing materials.

REMARKS: See Fire-Hazard Properties of Flammable Liquids, Gases and Volatile Solids (NFPA No. 325M).

XYLOL

See XYLENE

ZINC (Powder or Dust) Zn

DESCRIPTION: Bluish-gray powder.

FIRE AND EXPLOSION HAZARDS: Dust forms explosive mixtures with air. Bulk dust in damp state may heat spontaneously and ignite on exposure to air. Contact with acids and alkali hydroxides (sodium hydroxide, potassium hydroxide, calcium hydroxide, etc.) results in evolution of hydrogen.

LIFE HAZARD: When heated, the fumes are highly toxic, causing "fume fever."

PERSONAL PROTECTION: In fire conditions wear self-contained breathing apparatus.

FIRE FIGHTING PHASES: Smother with suitable dry powder.

USUAL SHIPPING CONTAINERS: Cartons, boxes, barrels, drums.

STORAGE: Protect against physical damage. Store in cool, dry, ventilated place. Separate from acids, halogenated hydrocarbons and strong alkali hydroxides. Protect from moisture.

ZINC BICHROMATE $ZnCr_2O_7$

See DICHROMATES

ZINC CHLORATE $Zn(ClO_3)_2$

Nonfire Fire

DESCRIPTION: Colorless, very deliquescent crystals.

FIRE AND EXPLOSION HAZARDS: Powerful oxidizing material. Forms explosive mixtures with combustible, organic or other readily oxidizable materials. These mixtures are easily ignited by friction or heat. Containers may explode when involved in fire.

LIFE HAZARD: Toxic. Yields toxic fumes when involved in fire.

PERSONAL PROTECTION: In fire conditions wear self-contained breathing apparatus.

FIRE FIGHTING PHASES: Flood with water.

SHIPPING CONTAINERS: Glass bottles and metal drums.

STORAGE: Protect against physical damage. Separate from combustible, organic or other readily oxidizable materials, acids, ammonium salts, sulfur and flammable vapors. Avoid storage on wood floors. Immediately remove and dispose of any spilled zinc chlorate.

REMARKS: See Code for the Storage of Liquid and Solid Oxidizing Materials (NFPA No. 43A).

ZINC DICHROMATE $ZnCr_2O_7$

See DICHROMATES

ZINC DIETHYL

See DIETHYLZINC

ZINC ETHYL

See DIETHYLZINC

ZIRCONIUM (Powder or Sponge) Zr

DESCRIPTION: Hard, lustrous, grayish scales or powder.

FIRE AND EXPLOSION HAZARDS: In powdered form, zirconium is highly flammable and under some conditions will ignite spontaneously with explosive force. The ignition temperature is comparatively low. Zirconium powder is very susceptible to ignition and explosion in air by static electricity; sufficient static to cause ignition can be generated by aspiration of this dust into air. Zirconium powder forms explosive mixtures with oxidizing materials. Zirconium burns with an intensely brilliant flame. Combustion of zirconium in air is stimulated by the presence of limited amounts of water. To reduce the possibility of ignition, fine powder is sometimes kept completely immersed in water. When immersed, zirconium powder is difficult to ignite, but once ignited burns much more violently than in air. Layers of zirconium powder burn vigorously in atmospheres of carbon dioxide or nitrogen. Dry powder is sometimes stored under dry argon.

LIFE HAZARD: Inherent toxicity is low.

FIRE FIGHTING PHASES: Use suitable dry powder.

USUAL SHIPPING CONTAINERS: Glass or metal containers inside wooden boxes, metal barrels.

STORAGE: Protect against physical damage. Isolate from oxidizing materials.

REMARKS: Electrical installations in Class II hazardous locations, as defined in Article 500 of the National Electrical Code, should be in accordance with Article 502 of the Code. Class II, Group E, electrical equipment should be used in atmospheres containing zirconium dust. See Guide for Fire and Explosion Prevention in Plants Producing and Handling Zirconium (NFPA No. 482M).

ZIRCONIUM CHLORIDE

See ZIRCONIUM TETRACHLORIDE

ZIRCONIUM TETRACHLORIDE $ZrCl_4$

DESCRIPTION: White lustrous crystals.

FIRE AND EXPLOSION HAZARDS: Not combustible; corrosive powder; will react vigorously with water to form hydrogen chloride. Sublimes above 626° F.

LIFE HAZARD: Will fume in moist air. Fumes are highly irritating to eyes, respiratory tract, and skin. Liberates heat and hydrochloric acid on contact with water.

PERSONAL PROTECTION: Wear full protective clothing.

DU PONT

INDUSTRIAL CHEMICALS department

Copy D Borszek 9/6/84

MATERIAL SAFETY DATA SHEET

SECTION I

MANUFACTURER'S NAME: E. I. DU PONT DE NEMOURS AND COMPANY (INC.)	EMERGENCY TELEPHONE NO.: (302) 774-7500
ADDRESS (Number, Street, City, State, and ZIP Code): WILMINGTON, DE 19898	
CHEMICAL NAME AND SYNONYMS: ZINC CYANIDE, CYANIDE OF ZINC	TRADE NAME AND SYNONYMS: ZINC CYANIDE
CHEMICAL FAMILY: CYANIDES	FORMULA: $Zn(CN)_2$

SECTION II HAZARDOUS INGREDIENTS OF MIXTURES

Not a Mixture

SECTION III PHYSICAL DATA

BOILING POINT (°F)	Solid	SPECIFIC GRAVITY (H_2O=1)	1.85
VAPOR PRESSURE (mm Hg)	0	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)	Not Applicable	EVAPORATION RATE	0
SOLUBILITY IN WATER	Insoluble		
APPEARANCE AND ODOR	Odorless White Powder		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): Not Flammable	FLAMMABLE LIMITS: ---	Lel: ---	Uel: ---

EXTINGUISHING MEDIA: Not Flammable

SPECIAL FIRE FIGHTING PROCEDURES: Not Flammable

UNUSUAL FIRE AND EXPLOSION HAZARDS: Contact with acids or weak alkalis liberates poisonous and flammable hydrogen cyanide gas.

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: 5 mg/m^3, As CN^- (Skin)

EFFECTS OF OVEREXPOSURE: May be fatal if swallowed, inhaled or absorbed through the broken skin. Causes eye burns and may irritate the skin.

EMERGENCY AND FIRST AID PROCEDURES: In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, call a physician. In case of poisoning, carry patient to fresh air, have him lie down. Remove contaminated clothing but keep patient warm. Start treatment immediately - see directions on product label or in product literature. Call a physician.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATIBILITY (Materials to avoid) Acids and weak alkalis liberate poisonous gas: reacts violently with nitrates and other oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS
None

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Sweep up spillage. Treat contaminated area with hypochlorite solution to destroy the cyanide. Flush area with water.

WASTE DISPOSAL METHOD
After decontamination as described above, drain solution to neutral chemical waste sewer.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specific Type)
For dust, use U.S. Bureau of Mines approved dust aspirator.

VENTILATION	LOCAL EXHAUST: Maintain adequate ventilation	SPECIAL: Air mask in emergencies.
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES: Dry cotton (solids); Rubber (solutions).	EYE PROTECTION: Chemical Safety Goggles.

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Do not breath gas or dust. Do not get in eyes. Avoid contact with skin. Wash thoroughly after handling. Store in a dry, well ventilated area. Keep container closed. Do not store or mix with acids or weak alkalis. Keep away from feed and foodstuffs.

OTHER PRECAUTIONS

*For more information refer to:
Manufacturing Chemists Association Chemical Safety Data Sheet No. SD-30;
Du Pont Data Sheet on Zinc Cyanide A-97203.

1/7/77

E-13301

DU PONT
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0908-4180

TRW-02792

REV. 4 ZINC DUST CQO-0158

MATERIAL SAFETY DATA SHEET | SPEC/MSDS #606-2 | DATE: 01/05/90

APR 24 1990

PRODUCT IDENTIFICATION

TRADE NAME: ZINC DUST	GENERIC NAME: SAME
MANUFACTURERS NAME: MEADOWBROOK COMPANY	CAS NUMBER: 7440-66-6
ADDRESS (STREET): MAIN STREET	PHONE NUMBER (EMERGENCY): (304) 623-2916
CITY: SPELTER STATE: WV ZIP: 26438	CHEMICAL STRUCTURE: Zn

I • PRODUCT INGREDIENTS

CHEMICAL AND/OR COMMON NAME	CAS NUMBER	%	TLV/TEL
Same ✓	✓	100	15 Mg. IM3

II • PHYSICAL DATA

BOILING POINT: NA	VAPOR PRESSURE: NA	SPECIFIC GRAVITY: 7.14	MELTING POINT: 420° C
SOLUBILITY IN WATER: -0-	VAPOR DENSITY (AIR=1): NA	PERCENT VOLATILE: NA	EVAPORATION RATE: (=1) NA

APPEARANCE AND ODOR: LIGHT GRAY POWDER -- NO ODOR

III • FIRE AND EXPLOSION DATA

FLASH POINT: NA	FLAMMABLE LIMITS: NA	LEL: .48 oz.	UEL: NA

EXTINGUISHING MEDIA: FOAM OR OTHER SMOTHERING AGENT

SPECIAL FIREFIGHTING PROCEDURE: AVOID WATER

UNUSUAL FIRE OR EXPLOSION HAZARDS: 0.48 oz. cu. ft. EL 48 PSIG Max Pressure

IV • HEALTH HAZARD INFORMATION

HAZARD BY ROUTE OF EXPOSURE (INDICATE CHRONIC AND ACUTE)

INHALATION: NO CHRONIC OR ACUTE HAZARD

INGESTION: NO CHRONIC OR ACUTE HAZARD

EYE: NO CHRONIC OR ACUTE HAZARD

TRW-02793

SKIN CONTACT/ABSORPTION: NO HAZARD

SIGNS AND SYMPTOMS ASSOCIATED WITH EXPOSURE OVER TLV:
TRANSITORY ALTERNATING FEVER & CHILL (Metal Fume Fever) 8-16 hours duration

HEALTH HAZARD INFORMATION CONTINUED ON BACK

ZINC DUST pg 2 of 2

V • HEALTH HAZARD INFORMATION (Continued) ~~MDS CODE #~~ CQ0-0158

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED: NONE

ANY OF PART I LISTED AS CARCINOGENS: (NTP, IARC, OSHA) NO

Approved/Not Approved 4/25/90
Signature

INHALATION:	INGESTION:
REST & ASPIRIN	NONE
EYE CONTACT: NONE	SKIN CONTACT: NONE

SKIN ABSORPTION: NONE

REMARKS

Please ensure each person is explained the HAZARD from exposure to chemical and trained in handling and/or use, including spill procedure and given protective equipment/clothing prior to his first day of work.

2. Keep copy of this MSDS in area.

VI • CONDITIONS FOR SAFE USE (When over TLV)

RESPIRATORY PROTECTION: STANDARD DUST RESPIRATOR OSHA OR NIOSH

EYE PROTECTION: GENERAL PURPOSE SAFETY GOGGLES

PROTECTIVE GLOVES: RECOMMENDED, BUT NOT REQUIRED

OTHER PROTECTIVE CLOTHING/EQUIPMENT: NONE

VENTILATION REQUIREMENTS; NONE

VII • REACTIVITY DATA

IS MATERIAL STABLE?	WILL HAZARDOUS POLYMERIZATION OCCUR?
YES	NO
INCOMPATIBILITY: MINERAL ACIDS, SULPHUR, CHLORINATED HYDROCARBONS	CONDITIONS TO AVOID: MOISTURE

HAZARDOUS DECOMPOSITION PRODUCTS: NO

VIII • SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED: BROOM & SHOVEL INTO DRY, COVERED CONTAINER

WASTE DISPOSAL METHOD: LAND FILL

RCRA REGULATED:	DOT REGULATED:	DOT PROPER SHIPPING NAME:	DOT NUMBER:
yes __ no X	yes X no __	ZINC DUST	UN 1436

IX • SPECIAL PRECAUTIONS

SPECIAL PRECAUTIONS FOR HANDLING AND STORAGE: COOL, DRY STORAGE AREA

OTHER PRECAUTIONS: NONE

PREPARED BY:	TITLE:	PHONE NUMBER:
G. W. Webster	Chief Chemist	(304) 623-2916

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, THE MANUFACTURER MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

Federated Genco LTD
Burlington, Ontario

416-637-5288

MP-20 (17) Pieces
ZINC DUST
100# PAILS

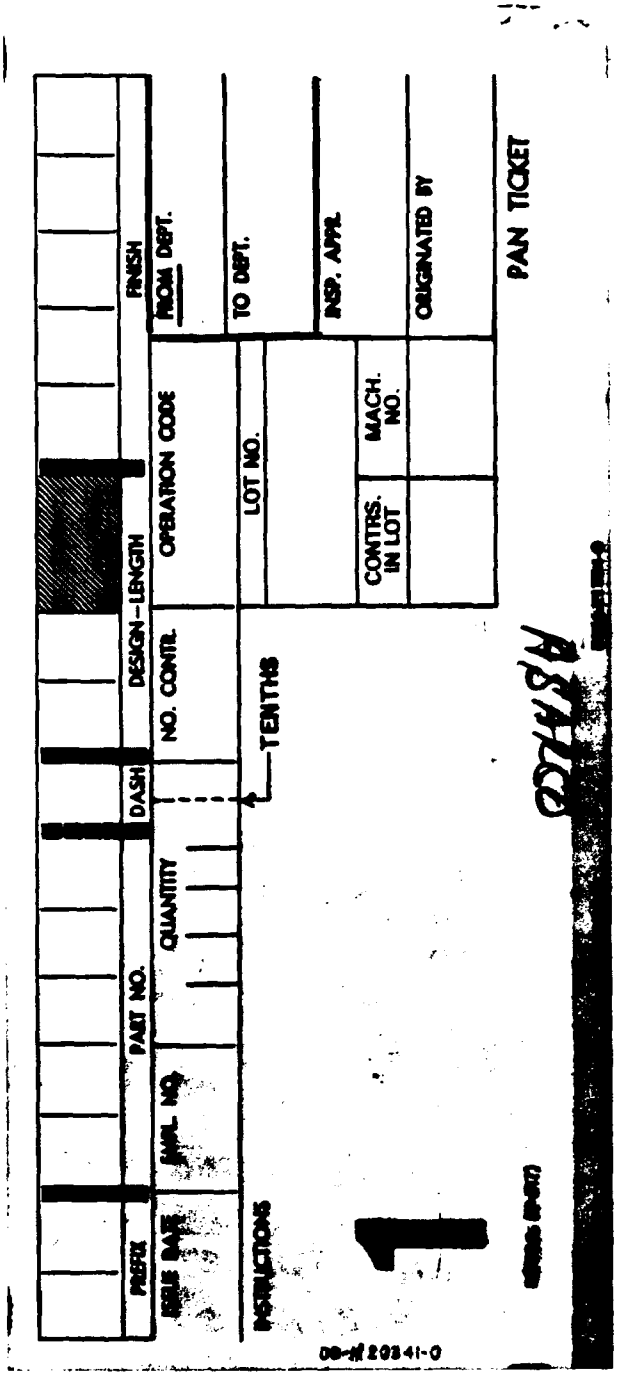
~~[illegible]~~
MR. Heaton - Canada

DAN LUKENS
Flanders Eq
WestBoro MASS
Agent

1700#
508-366-1300
Lukins
1-800-357-5367
Wife of
DAN TOOMES
FAX 508-366-0771

0908-4183

TRW-02795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INSP. APPR.
TO DEPT.
FROM DEPT.
OPERATION CODE
LOT NO.
MACH. NO.
CONTRS. IN LOT
NO. CONTR.
DESIGN—LENGTH
FINISH
DASH
PART NO.
QUANTITY
TENTHS
INSTRUCTIONS

0908-4184

FEDERATED METALS

Federated Metals Corporation
A subsidiary of ASARCO

ZINC DUST

MATERIAL SAFETY DATA SHEET

A. GENERAL INFORMATION

TRADE NAME (COMMON NAME OR SYNONYM)	FMC PRODUCT CODE #
Federated Zinc Dust	

CHEMICAL NAME

Zinc Dust — EPA No. B823-4379 — UN No. 1436

FORMULA	MOLECULAR WEIGHT
Zn-ZnO	NOT APPLICABLE

ADDRESS (No., STREET, CITY, STATE AND ZIP CODE)

Federated Metals Corporation
180 Maiden Lane
New York, New York 10038 Phone: 212-510-2000

CONTACT	PHONE NUMBER	ISSUED DATE	REVISED DATE
General Information - Department of Environmental Sciences	DAY 801-262-2459 NIGHT 801-943-1754	6/19/85	6/19/85
First Aid Information - (Dr. C. H. Hine)	DAY 415-777-2213 NIGHT 415-777-2214		
Transportation Emergencies - CHEMTREC	800-424-9300		

B. HAZARDOUS INGREDIENTS

need MSDS

MATERIAL OR COMPONENT	C.A.S. #	WT. %	PERMISSIBLE AIR CONCENTRATION
√Zinc	7440-66-6	95-97	15.0 mg/cu.m.-dust
√Zinc oxide	1314-13-2	3-5	15.0 mg/cu.m.-dust 5.0 mg/cu.m.-fume

☒ OSHA ☐ ACGIH
☐ OTHER

C. FIRST AID MEASURES

Inhalation: Symptomatic treatment such as bed rest and aspirin may afford some relief from chills and fever. Recovery is usually complete in 24 hours. If symptoms persist, consult a physician.

Ingestion: Induce vomiting in conscious individual and call a physician.

0908-4185

TRW-02797

D. HAZARDS INFORMATION

HEALTH

INHALATION
Metal fume fever with symptoms of fever, chills, metallic taste, chest tightness or nausea may result from inhalation of zinc fumes.

INGESTION
Relatively non-toxic by mouth but may irritate lining of stomach and intestines with symptoms including fever, stomach cramps or diarrhea.

SKIN

Possible mechanical irritation of skin.

EYES

Mechanical irritation

MEDICAL CONDITIONS POSSIBLY AGGRAVATED

None reported

UNUSUAL CHRONIC TOXICITY

None reported

FIRE AND EXPLOSION

FLASH POINT °C	AUTO IGNITION TEMPERATURE	FLAMMABLE LIMITS IN AIR (% BY VOL.)
NOT APPLICABLE ☐ OPEN CUP ☐ CLOSED CUP	600.0 °C	Zinc Dust - 480 g/cu.m.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Finely divided zinc dust may form explosive mixtures with air.
Contact with acids or alkaline hydroxides in solution may evolve hydrogen gas which may also reach explosive concentrations.

E. PRECAUTIONS/PROCEDURES

FIRE EXTINGUISHING AGENTS RECOMMENDED

Class D extinguisher; dry powder type

FIRE EXTINGUISHING AGENTS TO AVOID

Water

SPECIAL FIRE FIGHTING PRECAUTIONS
Use NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing if involved in fire.

ENGINEERING CONTROLS
Local exhaust ventilation is required for screening, heating, dumping, shoveling, or other operations where excessive airborne exposures may occur.

NORMAL HANDLING

Keep dust to a minimum during all handling.

STORAGE
Store in closed containers. Keep dry.
AVOID storage near acids, alkaline hydroxides and water.

SPILL OR LEAK

A clean-up procedure which minimizes exposure is required. Vacuuming is preferred.
Place all material in closed containers. Do not use compressed air for cleaning.
Use approved respiratory protection if possibility of dust/fume exposure exists.

SPECIAL PRECAUTIONS/PROCEDURES/LABEL INSTRUCTIONS
NPCA HMIS OH-OF-2R
NFPA 0-1-1-W

TRW-02798

Label signal word: CAUTION

PERSONAL HYGIENE

Avoid inhalation or ingestion. Practice good housekeeping and personal hygiene procedures.

F. PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION NIOSH/MSHA approved respirator for dust and/or fume.
EYES AND FACE Safety glasses recommended where the possibility of getting dust particles in eyes exists.
HANDS, ARMS, AND BODY Not required
OTHER CLOTHING AND EQUIPMENT Not required

G. PHYSICAL DATA

MATERIAL IS (AT NORMAL CONDITIONS): ☐ LIQUID ☒ SOLID ☐ GAS ☐ _____	APPEARANCE AND ODOR Gray powder, odorless	
BOILING POINT MELTING POINT 906 C 420 C	SPECIFIC GRAVITY (H_2O = 1) 7.1	VAPOR DENSITY (AIR = 1) NOT APPLICABLE
SOLUBILITY IN WATER (% by Weight) INSOLUBLE	pH NOT APPLICABLE	VAPOR PRESSURE (mm Hg at 20° C) ☐ (PSIG) ☐ NOT APPLICABLE
EVAPORATION RATE (Butyl Acetate = 1) ☐ (Ether = 1) ☐ NOT APPLICABLE	% VOLATILES BY VOLUME (At 20° C) NOT APPLICABLE	

H. REACTIVITY DATA

STABILITY ☐ UNSTABLE ☒ STABLE	CONDITIONS TO AVOID Moisture, high humidity
INCOMPATIBILITY (MATERIALS TO AVOID) Halogen gases, acids, bases, oxidizers may react violently or cause hydrogen to be evolved.	
HAZARDOUS DECOMPOSITION PRODUCTS Bulk dust in damp state may heat spontaneously and ignite on exposure to air. Contact with acids or alkaline hydroxides may evolve hydrogen.	
HAZARDOUS POLYMERIZATION ☐ MAY OCCUR ☒ WILL NOT OCCUR	CONDITIONS TO AVOID NOT APPLICABLE

I. ENVIRONMENTAL

EPA HAZARDOUS SUBSTANCE? ☒ YES ☐ NO IF SO, REPORTABLE QUANTITY: 1 # | 40 CFR 116-117

WASTE DISPOSAL METHODS (DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS)
Hazardous if listed under 40 CFR 261.31 or 32, or possesses characteristics of 40 CFR 261 Subpart C.
If hazardous, must be treated, stored, or disposed in a facility meeting the requirements of 40 CFR 264 or 265. If non-hazardous, dispose in a facility meeting the requirements of 40 CFR 257. State and local requirements may differ.

RCRA STATUS OF UNUSED MATERIAL: | 40 CFR 261

If discarded in unaltered form, should be tested in accordance with 40 CFR 261 Subpart C and disposed as specified above.

J. REFERENCES

PERMISSIBLE CONCENTRATION REFERENCES
OSHA regulations for airborne contaminants 29 CFR 1910.1000
ACGIH "Threshold Limit Values for Chemical Substances...", 1984-85

HAZARD INFORMATION REFERENCES
"Documentation of the Threshold Limit Values," 4th Ed., ACGIH
Patty's Industrial Hygiene and Toxicology, Vol. 2A, 3rd Rev. Ed., 1981
NFPA "Fire Protection Guide on Hazardous Materials," 6th Ed., 1975
Hamilton,A. and Hardy,H., "Industrial Toxicology" 3rd ed., 1974
"Registry of Toxic Effects of Chemical Substances," NIOSH, 1980.

GENERAL
Hartmann,I., et. al., "Inflammability and Explosibility of Metal Powders," Bureau of Mines RI 3722, 1943.
Jacobson,M., et. al., "Explosibility of Metal Powders," Bureau of Mines RI 6516, 1964.

K. ADDITIONAL INFORMATION

Information (hazards, precautions, first aid, etc.) is abbreviated. More detailed information is contained in references found in Section J.

ACGIH Limits:
Zinc(dust)----------10 mg/cu.m.
Zinc Oxide(fume)---------- 5 mg/cu.m.
Zinc Oxide(dust)----------10 mg/cu.m.

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U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Federated Metals Corporation	801-262-2459

ADDRESS (Number, Street, City, State, and ZIP Code): P.O. Box 471, 2230 Indianapolis Blvd., Whiting, Indiana 46394

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Zinc Dust	Federated Zinc Dust 3MP20

CHEMICAL FAMILY	FORMULA
Zinc	Zn

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS Zinc Dust (see below)		15.0	BASE METAL		
~~CATALYST~~ Metallic Zinc - 96.5%			ALLOYS		
~~VEHICLE~~ Lead - 0.05% max.		.2	METALLIC COATINGS		
~~SOLVENTS~~ Iron - 0.002% max.			FILLER METAL PLUS COATING OR CORE FLUX		
~~ADDITIVES~~ Zinc Oxide - Balance		5.0	OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILDING POINT (°F.)	1665° F	SPECIFIC GRAVITY (H_2O=1)	7.11
VAPOR PRESSURE (mm Hg.) at 327° C	0.004	PERCENT, VOLATILE BY VOLUME (%)	NA
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (_____=1)	NA
SOLUBILITY IN WATER reacts with water		Molecular Weight	65.4

APPEARANCE AND ODOR Blue Gray Powder

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
NA			

EXTINGUISHING MEDIA CO_2 or dry chemical type extinguisher - sand

SPECIAL FIRE FIGHTING PROCEDURES Cover container, exclude air and/or water. Under certain conditions, water can cause ignition of zinc dust in container.

UNUSUAL FIRE AND EXPLOSION HAZARDS Example: water slowly dripping into open drums of dust.

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: For zinc oxide fume: 5mg/m^3

EFFECTS OF OVEREXPOSURE: Excessive inhalation of the freshly formed fume may produce characteristic symptoms known as metal fume fever or "Zinc Shakes". Only the freshly formed fume is potent.

EMERGENCE AND FIRST AID PROCEDURES: Usually not important. Remove for exposure. Symptomatic treatment such as bed rest and aspirin may afford some relief from the chills and fever; however recovery is complete in 24 to 48 hours.

SECTION VI - REACIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	X	water, moisture, high humidity

INCOMPATABILITY *(Materials to avoid)*: water, acids, certain halogenated chemicals

HAZARDOUS DECOMPOSITION PRODUCTS: Zinc dust reacts with water to form hydrogen, which in a confined space with air or oxygen may reach an explosive concentration.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Shovel or sweep up, then clean up area with vacuum cleaner.

WASTE DISPOSAL METHOD: Dispose of material in closed containers

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*: U.S. Bureau of Mines approved type respirator.

VENTILATION		
	LOCAL EXHAUST: Recommended (see below)	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES: Recommended, not required

EYE PROTECTION: Recommended, not required

OTHER PROTECTIVE EQUIPMENT: Use local exhaust ventilation and dry baghouse for collection.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in dry place in closed container. Keep away from mositure (water, moist air) and acids.

OTHER PRECAUTIONS: When handling, consider zinc dust a "nuisance dust" so adequate ventilation should be provided.

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U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Federated Metals Corporation	801-262-2459
ADDRESS (Number, Street, City, State, and ZIP Code) P.O. Box 471, 2230 Indianapolis Blvd., Whiting, Indiana, 46394	
CHEMICAL NAME AND SYNONYMS Zinc Dust	TRADE NAME AND SYNONYMS Federated Zinc Dust MP-15
CHEMICAL FAMILY Zinc	FORMULA Zn

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS Zinc Dust (see below)		15.0	BASE METAL		
Metallic Zinc - 96.5%			ALLOYS		
Lead - 0.05% max.		.2	METALLIC COATINGS		
Iron - 0.002% max.			FILLER METAL PLUS COATING OR CORE FLUX		
Zinc Oxide - Balance		5.0	OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILDING POINT (°F.)	1665° F	SPECIFIC GRAVITY (H_2O=1)	7.11
VAPOR PRESSURE (mm Hg.) at 327° C	0.004	PERCENT, VOLATILE BY VOLUME (%)	NA
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (_____=1)	NA
SOLUBILITY IN WATER reacts with water		Molecular Weight	65.4
APPEARANCE AND ODOR Blue Gray Powder			

TRW-02803

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) NA	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA CO_2 or dry chemical type extinguisher - sand			
SPECIAL FIRE FIGHTING PROCEDURES Cover container, exclude air and/or water. Under certain conditions, water can cause ignition of zinc dust in container.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Example: water slowly dripping into open drums of dust.			

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SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: For zinc oxide fume: 5mg/m^3

EFFECTS OF OVEREXPOSURE: Excessive inhalation of the freshly formed fume may produce characteristic symptoms known as metal fume fever or "Zinc Shakes". Only the freshly formed fume is potent.

EMERGENCE AND FIRST AID PROCEDURES: Usually not important. Remove for exposure. Symptomatic treatment such as bed rest and aspirin may afford some relief from the chills and fever; however recovery is complete in 24 to 48 hours.

SECTION VI - REACIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		
	STABLE	x	water; moisture, high humidity

INCOMPATABILITY *(Materials to avoid)*: water, acids, certain halogenated chemicals

HAZARDOUS DECOMPOSITION PRODUCTS: Zinc dust reacts with water to form hydrogen, which in a confined space with air or oxygen may reach an explosive concentration.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Shovel or sweep up, then clean up area with vacuum cleaner.

WASTE DISPOSAL METHOD: Dispose of material in closed containers.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*: U.S. Bureau of Mines approved type respirator.

VENTILATION		
	LOCAL EXHAUST: Recommended (see below)	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES: Recommended, not required

EYE PROTECTION: Recommended, not required

OTHER PROTECTIVE EQUIPMENT: Use local exhaust ventilation and dry baghouse for collection.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in dry place in closed container. Keep away from mositure (water, moist air) and acids.

OTHER PRECAUTIONS: When handling, consider zinc dust a "nuisance dust" so adequate ventilation should be provided.

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Occupational Safety and Health Administration

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OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Federated Metals Corporation	801-262-2431
ADDRESS (Number, Street, City, State, and ZIP Code) P.O. Box 471, 2230 Indianapolis Blvd., Whiting, Indiana 46394	
CHEMICAL NAME AND SYNONYMS Zinc Dust	TRADE NAME AND SYNONYMS Federated Zinc Dust MP-15
CHEMICAL FAMILY Zinc	FORMULA Zn

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS Zinc Dust (see below)		15.0	BASE METAL		
[redacted] Metallic Zinc - 96.5%			ALLOYS		
[redacted] Lead - 0.05% max.		.2	METALLIC COATINGS		
[redacted] Iron - 0.002% max.			FILLER METAL PLUS COATING OR CORE FLUX		
[redacted] Zinc Oxide - Balance		5.0	OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILDING POINT (°F.)	1665° F	SPECIFIC GRAVITY (H_2O=1)	7.11
VAPOR PRESSURE (mm Hg.) at 327° C	0.004	PERCENT, VOLATILE BY VOLUME (%)	NA
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (_____=1)	NA
SOLUBILITY IN WATER reacts with water		Molecular Weight	65.4
APPEARANCE AND ODOR Blue Gray Powder			

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SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) NA	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA CO_2 or dry chemical type extinguisher - sand			
SPECIAL FIRE FIGHTING PROCEDURES Cover container, exclude air and/or water. Under certain conditions, water can cause ignition of zinc dust in container.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Example: water slowly dripping into open drums of dust.			

(Continued on reverse side)

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SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: For zinc oxide fume: 5 mg/m^3

EFFECTS OF OVEREXPOSURE: Excessive inhalation of the freshly formed fume may produce characteristic symptoms known as metal fume fever or "Zinc Shakes". Only the freshly formed fume is potent.

EMERGENCE AND FIRST AID PROCEDURES: Usually not important. Remove from exposure. Symptomatic treatment such as bed rest and aspirin may afford some relief from the chills and fever; however recovery is complete in 24 to 48 hours.

SECTION VI - REACIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	water, moisture, high humidity

INCOMPATABILITY *(Materials to avoid)*: water, acids, certain halogenated chemicals

HAZARDOUS DECOMPOSITION PRODUCTS: Zinc dust reacts with water to form hydrogen, which in a confined space with air or oxygen may reach an explosive concentration.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Shovel or sweep up, then clean up area with vacuum cleaner.

WASTE DISPOSAL METHOD: Dispose of material in closed containers.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*: U.S. Bureau of Mines approved type respirator.

VENTILATION	LOCAL EXHAUST: Recommended (see below)	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES: Recommended, not required

EYE PROTECTION: Recommended, not required

OTHER PROTECTIVE EQUIPMENT: Use local exhaust ventilation and dry baghouse for collection.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in dry place in closed container. Keep away from moisture (water, moist air) and acids.

OTHER PRECAUTIONS: When handling, consider zinc dust a "nuisance dust" so adequate ventilation should be provided.

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U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Federated Metals Corporation	
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 471, 2230 Indianapolis Boulevard, Whiting, Indiana 46394	
CHEMICAL NAME AND SYNONYMS: Zinc Dust	TRADE NAME AND SYNONYMS: Federated L-10 Zinc Dust
CHEMICAL FAMILY: Zinc	FORMULA: Zn

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS Zinc Dust		15.0	BASE METAL		
~~xxxxxx~~ Metallic Zinc 95.0%			ALLOYS		
~~xxxxxx~~ Lead 0.05 - 0.20%		0.2	METALLIC COATINGS		
~~xxxxxx~~ Cadmium 0.005 - 0.10%*		0.2	FILLER METAL PLUS COATING OR CORE FLUX		
~~xxxxxx~~ Iron 0.005 - 0.01%			OTHERS		
~~xxxxx~~ Zinc Oxide - Balance		5.0			

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
* Cadmium Oxide Fume - 0.1 mg/m^3		

SECTION III - PHYSICAL DATA

BOILING POINT (°F)	1665° F	SPECIFIC GRAVITY (H_2O = 1)	7.11
VAPOR PRESSURE (mm Hg.) at 327° C	0.004	PERCENT VOLATILE BY VOLUME (%)	NA
VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	NA
SOLUBILITY IN WATER Reacts with water		Molecular Weight	65.4
APPEARANCE AND ODOR Blue Gray Powder			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
NA			

EXTINGUISHING MEDIA: CO_2 or dry chemical type extinguisher - sand

SPECIAL FIRE FIGHTING PROCEDURES: Cover container, exclude air and/or water. Under certain conditions, water can cause ignition of zinc dust in container.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Example: Water slowly dripping into open drums of dust.

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Form OSHA-20
Rev. May 72

TRW-02807

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SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
For zinc oxide fume: 5mg/m^3

EFFECTS OF OVEREXPOSURE
Excessive inhalation of the freshly formed fume may produce characteristic symptoms known as metal fume fever or "Zinc Shakes". Only the freshly formed fume is potent.

EMERGENCE AND FIRST AID PROCEDURES
Usually not important. Remove from exposure. Symptomatic treatment such as bed rest and aspirin may afford some relief from the chills and fever; however recovery is complete in 24 to 48 hours.

SECTION VI - REACIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	water, moisture, high humidity

INCOMPATABILITY *(Materials to avoid)* water, acids, certain halogenated chemicals

HAZARDOUS DECOMPOSITION PRODUCTS Zinc dust reacts with water to form hydrogen, which in a confined space with air or oxygen may reach an explosive concentration.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Shovel or sweep up, then clean up area with vacuum cleaner.

WASTE DISPOSAL METHOD Dispose of material in closed containers.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* U.S. Bureau of Mines approved type respirator

VENTILATION	LOCAL EXHAUST Recommended (see below)	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES recommended, not required	EYE PROTECTION recommended, not required

OTHER PROTECTIVE EQUIPMENT Use local exhaust ventilation and dry baghouse for collection.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in dry place in closed container. Keep away from moisture (water, moist air) and acids.

OTHER PRECAUTIONS When handling, consider zinc dust a "nuisance dust" so adequate ventilation should be provided.

91732

[redacted]

1250 Terminal Tower, Cleveland, Ohio 44113, 216/621-6425

MATERIAL SAFETY DATA SHEET

203-937-ASW

Product Name: [redacted]			Emergency Phone No.: [redacted]
Plant Address:	131 Jericho Turnpike Jericho, NY 11753		Chemtrec Phone No. 800/424-9300
Prepared By:	TSCA Coordinator	Issue Date: 8/86	Revised Date: 3/89

INGREDIENTS AND HAZARDOUS COMPONENTS

Material	%	TLV	C.A.S. #	Suspect Carcinogen
ZINC OXIDE SARA 313 Chemical	<5	10*	1314-13-2	NO
ZINC DUST SARA 313 Chemical	>95	15	7440-66-6	NO
		mg/M3		

PHYSICAL DATA

Boiling Point: NA	Freezing Point: NA	Specific Gravity: 7.1	pH: NA
Vapor Pressure at 20° C: NA	Vapor Density (Air = 1): NA	% Volatiles by Volume: NA	Odor: None
Evaporation Rate (Butyl Acetate = 1) NA		Solubility in Water: Insoluble	
Appearance and Form: Fine, blue-gray powder			

FIRE AND EXPLOSION HAZARD DATA

Flash Point: None	Flammable Limits in Air: 480 gm/M3
Test Method: NA	
Extinguishing Media: Dry powder, dry chemical. Do not use water.	
Special Fire Fighting Procedures: Wear self-contained breathing apparatus.	TRW-02809
Unusual Fire and Explosion Hazards: Bulk dust in contact with water or damp air evolves hydrogen. Explosive condition. Dry dust forms explosive mixture with air.	
DOT Classification: DANGEROUS WHEN WET UN-1436	Note: UK = Unknown NA = Not Applicable

TRU-PLATE ZINC DUST

HEALTH HAZARD DATA

Effects of Overexposure and Primary Entries to Body:

Primary entry through inhalation of dust.
May irritate mucous membranes or eyes.

Emergency and First Aid Procedures:

Wash skin with soap and water.
Flush eyes with water for 15 minutes.
If any irritation persists, see a physician.

REACTIVITY DATA

☒ Stable ☐ Unstable Conditions to Avoid:

Incompatability — Materials to Avoid: Water, acids, alkalies.

Hazardous Decomposition Products: None known.

Hazardous Polymerization: ☐ May Occur ☒ Will Not Occur

SPILL OR LEAK PROCEDURES

Spills:
Avoid ignition sources.
Avoid dusting.
Vacuum up.

Waste Disposal Methods:
Bury in dry closed container.
Follow all Local, State and Federal Regulations.

SPECIAL PROTECTION INFORMATION

Respirator: NIOSH or MSHA approved dust respirator.

Ventilation: Sufficient to keep below TLV limits.

Gloves:	Eye and Face:	Other:
Any type	Safety glasses	Sufficient to prevent contact.

Handling and Storage:
Store in a cool, dry, well-ventilated space away from all ignition sources.
Store separate from acids and alkalies.

TRW-02810

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ZYT018

Westminster?

DUPONT

MATERIAL SAFETY DATA SHEET

E. I. DU PONT DE NEMOURS & CO
POLYMER PRODUCTS DEPARTMENT
1007 MARKET STREET
WILMINGTON, DE 19898

TELEPHONE NUMBERS
MEDICAL EMERGENCY 800–441–3637
PRODUCT INFORMATION 800–441–7515
TRANSPORTATION EMERGENCY 800–441–9300

MATERIAL IDENTIFICATION

PRODUCT NAME	Zytel® Nylon Resins 408 AL003, BK010, BN130, GY009, NC010, YL100, YLB100, 408HS BK009, BKB197, GYB009, NC10, 408L NC10, NC010FC, 450HSL BK152, 3189 NC10, 3189HSL BKB010, BKB072, BKB079, FE4176 BKB214, NC010, FE4193 BK010, FE4192 BK177, FE4196 NC010, CFE4004 NC010, 114L WT000
CHEMICAL NAME	Olefin modified polyhexamethylene adipamide. Toughened nylon.
CAS REGISTRY NUMBER	NA
DOT HAZARD CLASS	Not regulated
SHIPPING NAME	NA
PREPARER	J. B. Armitage **DATE** May 31, 1988

HAZARDOUS COMPONENTS

MATERIAL	Additives not hazardous by 29CFR1910.1200
CAS NO.	NA
CONCENTRATION %	NA
OSHA PEL	NA
ACGIH TLV	NA
ACGIH STEL	NA
DUPONT AEL	NA

SUBSTANCES PRESENT AT A CONCENTRATION OF 0.1% OR MORE CLASSIFIED AS A CARCINOGEN BY IARC, NTP OR OSHA: None.

PHYSICAL/CHEMICAL DATA

APPEARANCE	Granules
ODOR	None
MELTING POINT	NA
SOLUBILITY IN WATER	Insoluble
VOLATILE CONTENT	ca 1%
SPECIFIC GRAVITY	1.09

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TRW-02811

FIRE AND EXPLOSION HAZARD DATA

FLASH IGNITION TEMPERATURE 400°C **METHOD** Estimated

UNUSUAL FIRE, EXPLOSION HAZARDS Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

HAZARDOUS COMBUSTION PRODUCTS Ammonia, carbon monoxide, hydrogen cyanide, aldehydes.

SPECIAL FIRE FIGHTING INSTRUCTIONS No special instructions.

EXTINGUISHING MEDIA Water, carbon dioxide, foam, dry chemical.

HAZARDOUS REACTIVITY

MATERIALS TO AVOID Strong acids and oxidizing agents.

CONDITIONS TO AVOID Heating above 340°C.

HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, aldehydes, acids.

HEALTH HAZARD DATA

Read Section 12, Safety, in "Zytel® Molding Guide" Bulletin E-97221, before using Zytel®. Face mask and protective clothes recommended for abnormal processing problems.

ACUTE OR IMMEDIATE EFFECTS: ROUTES OF ENTRY AND SYMPTOMS

INGESTION Not a probable route of exposure.

SKIN Molten polymer causes thermal burns.

EYE Mechanical irritation.

INHALATION Very low toxicity. Granules not respirable.

EMERGENCY FIRST AID

- If exposed to fumes from overheating, move to fresh air. Consult a physician if symptoms persist.
- Wash skin with soap and plenty of water.
- Flush eyes with water. Consult a physician if symptoms persist.
- If molten polymer contacts skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical attention for thermal burn.

CHRONIC EFFECTS None known.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE None known.

PROTECTION INFORMATION

EYE Safety glasses are recommended.

SKIN Protective gloves are required when handling hot polymer. Also long sleeve cotton shirt and long pants if handling molten polymer.

VENTILATION Local exhaust at processing equipment to keep particulate below 15 mg/m^3 (OSHA limit for nuisance dusts).

RESPIRATOR None under normal processing if ventilation is adequate.

DISPOSAL

SPILL, LEAK OR RELEASE Sweep up to prevent a slipping hazard.

WASTE DISPOSAL Landfill or incineration in compliance with federal, state, and local regulations.

AQUATIC TOXICITY Toxicity is expected to be low based on insolubility of polymer in water.

STORAGE CONDITIONS Cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

The information in this Material Safety Data Sheet relates only to the specific material(s) designated herein and does not relate to use in combination with any other material or in any process.

NA = Not applicable
NE = Not established
AEL = Du Pont Company's Acceptable Exposure Limit
< = New or revised information in this section when " < " is in right margin

STATE RIGHT TO KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated. While we do not specifically analyze these products, or the raw materials used in their manufacture, for substances on various state hazardous substances lists, to the best of our knowledge the products on this Material Safety Data Sheet contain no such substances except for those specifically listed below:

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE: None known.

SUBSTANCES ON THE PENNSYLVANIA SPECIAL HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 0.01% OR MORE: None known.

NONHAZARDOUS INGREDIENTS PRESENT AT A CONCENTRATION OF 3% OR MORE REQUIRED TO BE LISTED BY PENNSYLVANIA: Since this product contains no hazardous substances as defined by the Pennsylvania R-T-K Regulations, a MSDS is not required by law.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER: None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

ZEP MANUFACTURING COMPANY
FIRST IN MAINTENANCE AND SANITATION

DATE : 05/22/86 ZEP REACH
SUPERSEDES: 04/12/86 PRODUCT NUMBER: 0925

SECTION I - E M E R G E N C Y C O N T A C T S

ZEP MANUFACTURING COMPANY
P.O. BOX 2015
ATLANTA, GEORGIA 30301
TELEPHONE (404)352-1680
BETWEEN 8:00A.M.-5:00P.M.
(EASTERN TIME ZONE)

NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404
435-2973, 996-0899, 252-1587, 351-2952, 971-3367
LOCAL POISON CONTROL CENTER .....
TRANSPORTATION EMERGENCY
CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED
DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - H A Z A R D O U S I N G R E D I E N T S

DESIGNATIONS	TLV (PPM)	EFFECTS (SEE REVERSE)	% IN PROD.
** LOW ODOR PARAFFINIC SOLVENT ** odorless base oil; dispersol; CAS# 64742-47-8; RTECS# NONE	500	CNS CBL	30-40
** NONYLPHENOXYPOLY(ETHYLENEOXY)ETHANOL ** poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy; CAS# 9016-45-9; RTECS# MD0905000; OSHA PEL N/D	N/D	EIR	<5

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - H E A L T H H A Z A R D D A T A

ACUTE EFFECTS OF OVEREXPOSURE:
THIS PRODUCT IS NOT SUFFICIENTLY VOLATILE TO CONSTITUTE A SIGNIFICANT IHALATION HAZARD. SEVERE OVER-EXPOSURE TO CONCENTRATED VAPOR MAY PRODUCE MILD CENTRAL NERVOUS SYSTEM DEPRESSION, CHARACTERIZED BY HEADACHE AND STUPOR. INTRODUCTION OF SOLVENTS, AS IN ASPIRATION OF VOMITUS FLUIDS, MAY PRODUCE CHEMICAL PNEUMONIA. THIS PRODUCT CAN BE AN EYE IRRITANT. INFLAMMATION OF EYE TISSUE IS CHARACTERIZED BY REDNESS, WATERING, AND/OR ITCHING.

0908-4203

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

ZEP MANUFACTURING COMPANY
FIRST IN MAINTENANCE AND SANITATION

DATE : 05/22/86 ZEP REACH
SUPERSEDES: 04/12/86 PRODUCT NUMBER: 0925

SECTION III - H E A L T H H A Z A R D D A T A (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:
SKIN WHICH IS REPEATEDLY DEFATTED BY CONTACT WITH THIS PRODUCT MAY BE MORE SUSCEPTIBLE TO IRRITATION, INFECTION, OR DERMITITIS.
NONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, & OSHA

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: N/A

HMIS CODES: HEALTH 0; FLAM. 0; REACT. 0; PERS. PROTECT. N/A; CHRONIC HAZ. NO

FIRST AID PROCEDURES:
SKIN : THIS PRODUCT IS FORMULATED FOR USE ON THE SKIN, BUT IT SHOULD BE RINSED OFF WITH WATER.
EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.
INHALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION PROMPTLY.
INGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS CONSCIOUS GIVE PLENTY OF WATER TO DRINK. GET MEDICAL ATTENTION AT ONCE.

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : NO SPECIAL MEASURES ARE REQUIRED.

EYE PROTECTION : NO SPECIAL MEASURES ARE REQUIRED.

RESPIRATORY PROTECTION: NO SPECIAL MEASURES ARE REQUIRED.

VENTILATION : NO SPECIAL MEASURES ARE REQUIRED.

SECTION V - P H Y S I C A L D A T A

BOILING POINT (F)	: N/D	SPECIFIC GRAVITY	: 0.92
VAPOR PRESSURE(MMHG)	: N/D	PERCENT VOLATILE BY VOLUME (%)	: 83.5%
VAPOR DENSITY(AIR=1)	: N/D	EVAPORATION RATE(=1)	: N/D
SOLUBILITY IN WATER	: EMULSIFIES	PH(CONCENTRATE)	: 8.0
		PH(USE DILUTION OF)	: N/A

APPEARANCE AND ODOR : LIGHT GREEN GEL WITH ALMOND FRAGRANCE

SECTION VI - F I R E A N D E X P L O S I O N D A T A

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FLASH POINT(F) (METHOD USED): NONE BELOW 160F (TCC)
FLAMMABLE LIMITS LEL N/D UEL N/D
EXTINGUISHING MEDIA : GEL STRUCTURE INHIBITS COMBUSTIBILITY OF SOLVENT.
SPECIAL FIRE FIGHTING: NONE
UNUSUAL FIRE HAZARDS : PRODUCT WILL NOT FLASH UNLESS HEATED ABOVE 212F.

SECTION VII - R E A C T I V I T Y D A T A

STABILITY : STABLE
INCOMPATIBILITY(AVOID) : STRONG OXIDIZERS
POLYMERIZATION : WILL NOT OCCUR
HAZARDOUS DECOMPOSITION: MAY DECOMPOSE TO FORM TOXIC/CORROSIVE GASES IF EXPOSED TO HIGH HEAT.

SECTION VIII - S P I L L A N D D I S P O S A L P R O C E D U R E S

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
OBSERVE SAFETY PROCEDURES IN SECTION 4 & 9 DURING CLEAN-UP. ABSORB SPILL ON INERT ABSORBENT MATERIAL (eg ZEP-O-ZORB). PICK UP AND PLACE RESIDUE IN A SUITABLE WASTE CONTAINER. WASH SPILL AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

WASTE DISPOSAL METHOD:
LIQUID WASTES ARE NOT PERMITTED IN LANDFILLS. PRODUCT IS NOT CONSIDERED A HAZARDOUS WASTE UNDER RCRA. UNUSABLE LIQUID MAY BE ABSORBED ON AN INERT ABSORBENT (eg ZEP-O-ZORB), DRUMMED AND TAKEN TO A CHEMICAL OR INDUSTRIAL LANDFILL. CONSULT LOCAL, STATE OR FEDERAL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS. : N/A

SECTION IX - S P E C I A L P R E C A U T I O N S

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:
STORE TIGHTLY CLOSED CONTAINER IN DRY AREA AT TEMPERATURES BETWEEN 40 AND 120 DEGREES F.
KEEP PRODUCT OUT OF EYES.
KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - T R A N S P O R T A T I O N D A T A

DOT PROPER SHIPPING NAME
NONE
DOT HAZARD CLASS: N/A
DOT I.D. NUMBER : N/A DOT LABEL/PLACARD: NONE
EPA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED
EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE

Olin MATERIAL SAFETY DATA

OCEAN® Network
EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION

CHEMICAL NAME & SYNONYMS		
ZHC Copper; Zirconium High Copper Alloy		
CHEMICAL FAMILY	**FORMULA**	**TRADE NAME**
Copper	Mixture	Alloy 151
DESCRIPTION		**CAS NO.**
Metal		Not assigned/mixture

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Precautions needed for abrasive, melting or other operations generating a dust or fume. Do not get dust or fume in eyes, on skin or on clothing. Do not take internally. Wash thoroughly with soap and water before eating or smoking. Avoid breathing dust or fumes.

PROTECTIVE EQUIPMENT		VENTILATION REQUIREMENTS
Eyes	Dust - Goggles	As required to keep airborne concentrations below TLV for copper and zirconium.
Gloves	Impervious	
Other	NIOSH/MSHA approved high efficiency particulate respirator if excessive dusting/fumes occur	

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL		OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS
Copper	Dust	1 mg/m^3	TD_{LO} 120 ug/kg (human)	No data	Metal fume fever, respiratory irritation.
	Fume	0.1 mg/m^3			
Zirconium		5 mg/m^3	No data	No data	Presents no hazard because 0.2% maximum of alloy.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD	OSHA CLASSIFICATION	FLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER
Not applicable	Non-combustible solid		N/A	N/A

EXTINGUISHING MEDIA

Non-combustible - Choose extinguishing media suitable for surrounding materials.

SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES

Use NIOSH/MSHA approved self-contained breathing apparatus where this material is involved in a fire.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

None established for mixture (Copper fume - 0.2 mg/m^3; Zirconium - 5 mg/m^3 TWA, 10 mg/m^3 STEL ACGIH 1985-86).

SYMPTOMS OF OVER EXPOSURE

Dust and fume - Sneezing, congestion, metallic taste, nausea, chills.

EMERGENCY FIRST-AID PROCEDURES

SKIN	Dust or fume: Wash with soap and water before eating or smoking. If an irritation develops, call a physician.
EYES	Dust or fume: Flush thoroughly with water for 15 minutes. Call a physician.
INGESTION	Dust: Not a likely route of exposure. If ingested, call a physician.
INHALATION	Dust or Fume: Remove victim to fresh air. Call a physician.

Chemical — Alloy 151 — CAS No.

TRW-02818

0908-4206

CHEMICAL NAME Alloy 151

SECTION VI - TOXICOLOGY (Product)

ACUTE ORAL LD 50	No data for alloy	CARCINOGENICITY	Not known to be carcinogenic
		MUTAGENICITY	Not known to be mutagenic
ACUTE DERMAL LD 50	No data for alloy	EYE IRRITATION	Dust is irritant
		PRIMARY SKIN IRRITATION	Dust may be an irritant
ACUTE INHALATION LC 50	No data for alloy		

PRINCIPAL ROUTES OF ABSORPTION
Inhalation of dust or fume

EFFECTS OF ACUTE EXPOSURE Skin, eye and mucous membrane irritation. Respiratory irritant. Metal fume fever.

EFFECTS OF CHRONIC EXPOSURE None expected under industrial use conditions. Overexposure may cause liver and kidney effects.

SECTION VII - SPILL AND LEAKAGE PROCEDURES (Control Procedures)

ACTION FOR MATERIAL RELEASE OR SPILL

Dust or Fume: Wear NIOSH/MSHA approved high efficiency particulate respirator. Follow OSHA regulations for respirator use (See 29 CFR 1910.134). Wear goggles, coveralls, impervious gloves and boots. Shovel or sweep up and place in an appropriate container. Wash all contaminated clothing before reuse.

In the event of a large spill, use the emergency telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. CLASS Not regulated

SECTION IX - REACTIVITY DATA

STABLE X UNSTABLE AT ____ °C ____ °F	HAZARDOUS POLYMERIZATION	MAY OCCUR	
		WILL NOT OCCUR	X

CONDITIONS TO AVOID Carbon monoxide during melting

INCOMPATIBILITY (Material to Avoid) Dust and fume - acetylene, chlorine

HAZARDOUS DECOMPOSITION PRODUCTS Copper fume, Zirconium fume

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SECTION X - PHYSICAL DATA

MELTING POINT	1796°F	VAPOR PRESSURE	N/A	VOLATILES	N/A
BOILING POINT	No data	SOLUBILITY IN WATER	Insoluble	EVAPORATION RATE	N/A
SPECIFIC GRAVITY (H,O = 1)		pH	N/A	VAPOR DENSITY (Air = 1)	N/A
DENSITY	.323 lb/cu. in.				

INFORMATION FURNISHED BY: Environmental Hygiene and Toxicology Department (203) 789-5436

DATE February 20, 1986

Department of Environmental Hygiene and Toxic
(203) 789

1047

Olin CORPORATION
120 Long Ridge Road, Stamford, Connecticut 0690
OCEAN® Network
EMERGENCY PHONE 1-800-OLIN-911

0908-4207

MATERIAL SAFETY DATA SHEET

MC-X-0104-6 (3/85)

SPEC./MSDS NUMBER	DATE
	7/9

PRODUCT IDENTIFICATION

TRADE NAME	GENERIC NAME
ZINC ANODES	
MANUFACTURER'S NAME	**CAS NUMBER**
BELMONT METALS INC	7440-66-6
ADDRESS (STREET)	**PHONE NUMBER (EMERGENCY)**
330 BELMONT AVENUE	718 342-4900
CITY / STATE / ZIP	**CHEMICAL STRUCTURE**
BROOKLYN NY 11207	

I • PRODUCT INGREDIENTS

CHEMICAL AND/OR COMMON NAME	CAS NUMBER	%	TLV/PEL
ZINC			
FOR ZINC OXIDE FUME: 5.0mg/m3			

II • PHYSICAL DATA

BOILING POINT	VAPOR PRESSURE	SPECIFIC GRAVITY	MELTING POINT
1665°F		7.14	
SOLUBILITY IN WATER	**VAPOR DENSITY (AIR = 1)**	**PERCENT VOLATILE**	**EVAPORATION RATE (= 1)**
INSOL			

APPEARANCE AND ODOR
METALLIC NO ODOR

III • FIRE AND EXPLOSION DATA

FLASH POINT	FLAMMABLE LIMITS	FLAMABLE LIMITS	LEL	UEL
NA				

EXTINGUISHING MEDIA
CO2 OR DRY CHEMICAL

SPECIAL FIREFIGHTING PROCEDURES
NONE

UNUSUAL FIRE OR EXPLOSION HAZARDS
NONE

IV • HEALTH HAZARD INFORMATION

HAZARD BY ROUTES OF EXPOSURE (Indicate chronic and acute)

INHALATION

INGESTION

EYE

SKIN CONTACT/ABSORPTION

SIGNS AND SYMPTOMS ASSOCIATED WITH EXPOSURE OVER TLV EXCESSIVE INHALATION OF THE FRESHLY FOR
FUME MAY PRODUCE CHARACTERISTIC SYMPTOMS KNOWN AS METAL FUME FEVER OR
ZINC SHAKES. ONLY THE FRESHLY FORMED FUME IS POTENT

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED

ANY OF PART I LISTED AS CARCINOGENS? (NTP, IARC, OSHA)

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HEALTH HAZARD INFORMATION CONTINUED ON BACK

V • HEALTH HAZARD INFORMATION (Continued)

EMERGENCY/FIRST AID PROCEDURES

INHALATION
USUALLY NOT IMPORTANT. REMOVE FROM EXPOSURE SYMPTOMATIC TREATMENT SUCH

INGESTION
AS BED REST AND ASPIRIN MAY AFFORD SOME RELIEF FROM FEVER AND CHILLS

EYE CONTACT
HOWEVER RECOVERY IS COMPLETE WITHIN 24-48 HOURS

SKIN CONTACT

SKIN ABSORPTION

VI • CONDITIONS FOR SAFE USE (When over TLV)

RESPIRATORY PROTECTION
U.S. BUREAU OF MINES APPROVED RESPIRATOR .

EYE PROTECTION
RECOMMENDED NOT REQUIRED

PROTECTIVE GLOVES
NOT REQUIRED

OTHER PROTECTIVE CLOTHING/EQUIPMENT
IT IS RECOMMENDED OPERATIONS INVOLVING ZINC OR ZINC OXIDE DUST OR FUME BE PER

VENTILATION REQUIREMENTS
FORMED UNDER LOCAL EXHAUST VENTILATION

VII • REACTIVITY DATA

IS MATERIAL STABLE?	WILL HAZARDOUS POLYMERIZATION OCCUR?
YES	NO
INCOMPATIBILITY	**CONDITIONS TO AVOID**
MAY REACT WITH ACIDS	

HAZARDOUS DECOMPOSITION PRODUCTS
AT EXTREME HEAT ZINC OXIDE FUME MAY BE EVOLVED

VIII • SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATEIAL IS SPILLED OR RELEASED
ANY NORMAL CLEAN UP PROCEDURE IS APPLICABLE

WASTE DISPOSAL METHOD BE COGNIZANT OF POTENTIAL WATER POLLUTION PROBLEMS. NOTE: THIS MATERIAL MAY HAVE VALUE ON A RECYCLED BASIS

RCRA REGULATED ☐ Yes ☐ No	RCRA NUMBER	CERCLA (Superfund) REPORTABLE QUANTITY	
DOT REGULATED ☐ Yes ☐ No	DOT PROPER SHIPPING NAME	DOT HAZARD CLASS	DOT NUMBER

IX • SPECIAL PRECAUTIONS

SPECIAL PRECAUTIONS FOR HANDLING AND STORAGE
NONE

OTHER PRECAUTIONS
NONE

PREPARED BY	PHONE NO.	TITLE
BRUCE N. REED	718 342-4900	VICE PRESIDENT

TRW-02821

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, THE MANUFACTURER MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.